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Indian Standard

SPECIFICATION FOR GAS MANTLES

(First Revision)

UDC 683·868·2/·5

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Indian Standard
SPECIFICATION FOR GAS MANTLES
(First Revision)

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Indian Standard

SPECIFICATION FOR GAS MANTLES

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 24 December 1981, after the draft finalized by the Oil Burning Appliances (Pressure Type) Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

0.2 This standard was first published in 1964. This revision of the standard has been necessitated as a result of experience gained through its implementation by the industry as well as users. The main change is in the shock test requirement.

0.3 Most of the mantles used in the country are of the art-silk variety which, for high light output without much loss of efficiency on continuous burning, have been found satisfactory. The use of art-silk in the manufacture of mantles has, therefore, been preferred but the standard does not preclude the use of other alternative materials.

0.4 Taking into consideration the views of producers, consumers and testing authorities, the Sectional Committee responsible for the preparation of this standard felt that it should be related to the manufacturing and trade practices followed in the country in this field. In preparing this standard considerable assistance has also been derived from BS 884 : 1941 (1960) Low pressure gas mantles, issued by the British Standards Institution.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the requirements for 100, 200, 300, 350 and 400 candela gas mantles for oil pressure lanterns, and it does not include hard mantles for low pressure gas lanterns.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Candela (cd) — The sixtieth part of luminous intensity normally emitted by one centimetre square area of integral radiator (black body) at the temperature of solidification of platinum.

2.2 Candle Power — The luminous intensity expressed in candelas.

2.3 Mean Horizontal Candle Power — Average of all the intensities in candelas measured in a horizontal plane passing through the centre of the luminous mantle.

3. MATERIALS AND MANUFACTURE

3.1 Materials — The gas mantles shall be manufactured, preferably, from art-silk. They may also be made from cotton, ramie or any other suitable material.

3.2 Manufacture — Stocking for the mantle shall be woven and the mantle cut to a suitable length to give the dimensions as given in Table 1. The mantles shall be suitably tied at the closed end and shall be provided with a thread for attachment to the nozzle, the thread being such that it retains the mantle on the nozzle even after burning. The mantle shall be treated with suitable chemicals to give the rated luminous intensity.

TABLE 1 DIMENSIONS OF MANTLE

Size Designation (1)	Rated Luminous Intensity (Candelas) (2)	Diameter of the Mantle in Finished Ironed Condition *Min* (3) mm	Diameter of the Burnt Mantle Skeleton *Min* (4) mm	Length of the Burnt Mantle Skeleton *Min* (5) mm
1	100	80	28	40
2	200	88	30	42
3	300	94	32	47
4	350	95	33	50
5	400	96	34	52

4. REQUIREMENTS

4.1 Life — Mantles shall have a minimum life of 50 hours and an average life of 60 hours measured on six samples when tested in accordance with **5.1.**

4.2 Luminous Intensity — Mantle shall have a minimum luminous intensity corresponding to its rated figure when tested in accordance with **5.2.**

4.3 Lighting Efficiency — Mantles shall have a lighting efficiency of not less than two (*see* **5.3**).

4.4 Capacity to Withstand Shock — Mantles shall be capable of withstanding the shock test prescribed in **5.4.**

5. TESTS

5.1 Life Test — Mantles shall be fitted to a standard lamp corresponding to the rated luminous intensity and shall be burnt continuously with minimum interruptions only for filling the oil tank of the lamp. The mantles shall not be subjected to any vibration or shock.

5.2 Luminous Intensity Test — Mantle shall be fitted to a standard lamp of equivalent rated luminous intensity and tested in accordance with Appendix B of IS : 1384-1977*.

5.2.1 The luminous intensity shall not decrease by more than 5 percent after the mantle has been burnt for 45 hours.

5.3 Lighting Efficiency — Lighting efficiency shall be calculated as ratio of the mean horizontal luminous intensity to the weight in grams of fuel consumed per hour.

5.4 Shock Test — The mantles shall he burnt for a continuous minimum period of two hours. They shall be subjected to shock test on a testing machine, a typical design of which is shown in Fig. 1. The horizontal and vertical movement may be 6 mm ± 1·0 mm to be controlled by cams. The mantles shall withstand a minimum of 150 shocks per minute.

5.4.1 Should more than 20 percent of the mantles subjected to this test fail to withstand 300 shocks, the mantles shall be deemed to have failed to satisfy the requirements of this specification.

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*Specification for oil pressure lanterns (*second revision*).

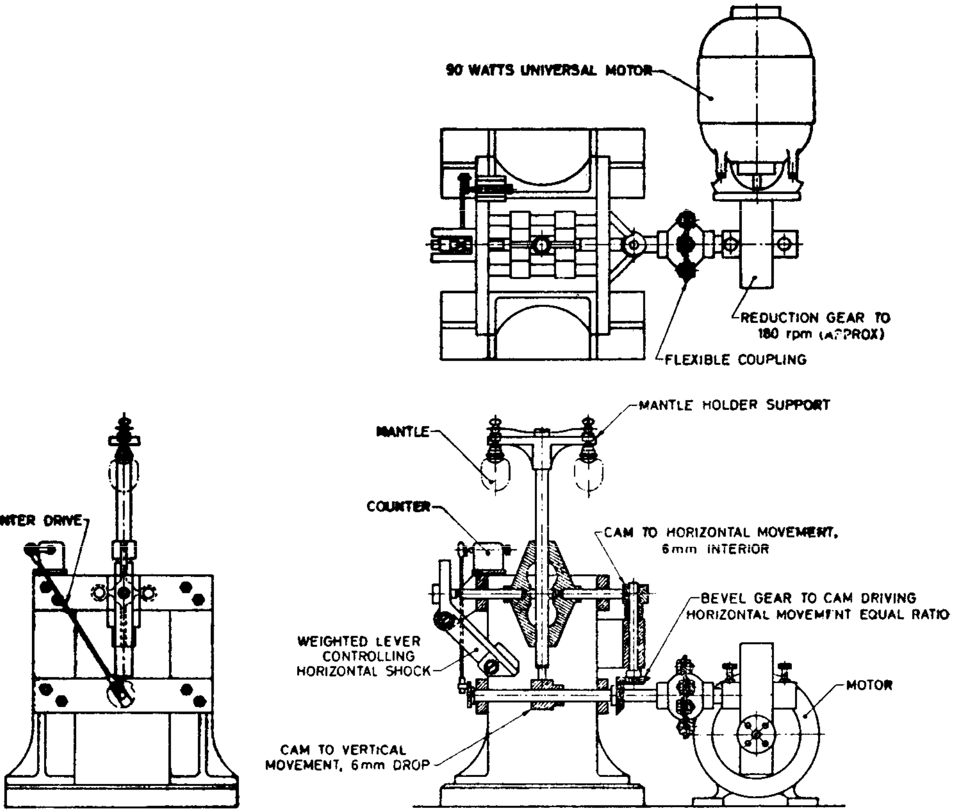
90 WATTS UNIVERSAL MOTOR
REDUCTION GEAR TO 180 rpm (APPROX)
FLEXIBLE COUPLING
MANTLE HOLDER SUPPORT
MANTLE
COUNTER
CAM TO HORIZONTAL MOVEMENT, 6mm INTERIOR
BEVEL GEAR TO CAM DRIVING HORIZONTAL MOVEMENT EQUAL RATIO
WEIGHTED LEVER CONTROLLING HORIZONTAL SHOCK
MOTOR
CAM TO VERTICAL MOVEMENT, 6mm DROP
COUNTER DRIVE

FIG. 1 SHOCK TESTING MACHINE

6. PACKING

6.1 Each mantle shall be packed in moisture-proof paper envelope. Ten or multiples of ten mantles shall be packed in a cardboard- or tin-box, or thick paper carton. Ten or multiples of ten such packets shall be packed in a suitable cardboard-box. On agreement between the purchaser and the supplier, 12 mantles may be packed in a cardboard- or tin-box or thick paper carton and 12 such packets in a cardboard-box.

7. MARKING

7.1 Paper envelopes in which individual mantles are packed, and the cartons or boxes shall be marked with the rated candle power, the quantity contained, the manufacturer's name or registered trade-mark and the words ' Made in India '.

7.1.1 The mantles may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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Printed at Printograph, New Delhi, India